

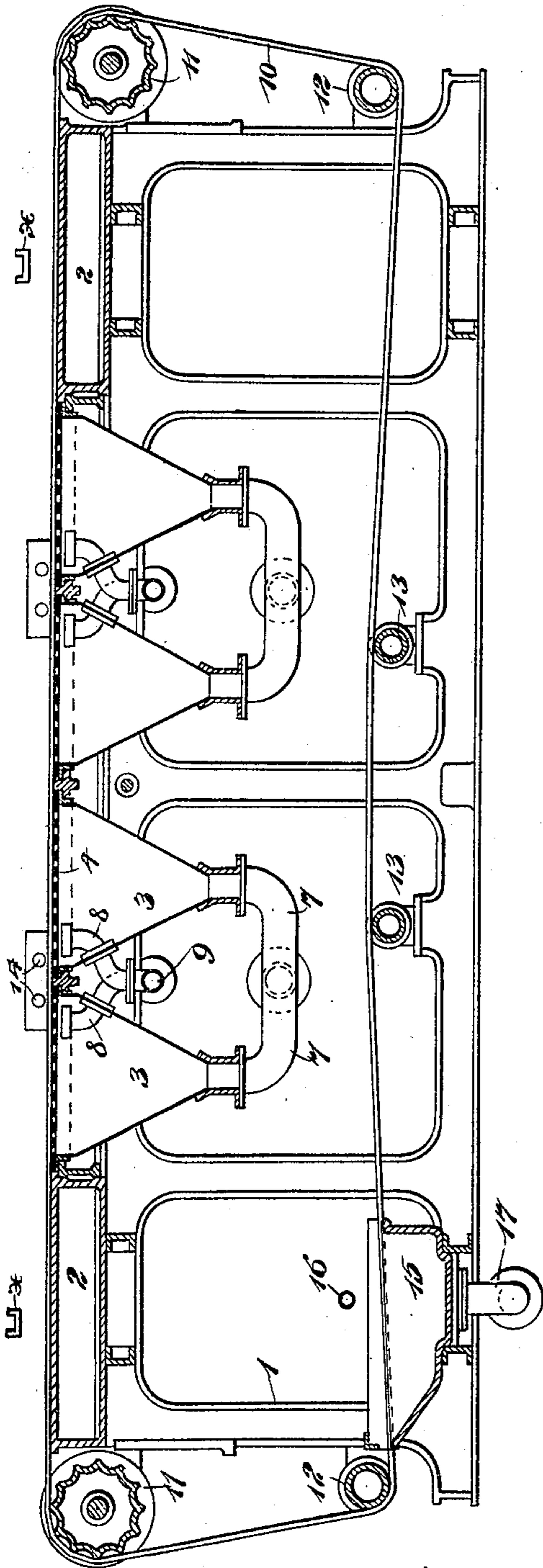
(No Model.)

2 Sheets—Sheet 1.

P. DROESHOUT.
FILTERING APPARATUS.

No. 583,361.

Patented May 25, 1897.



WITNESSES:

Donn Turtchell
C. R. Ferguson

FIG. 1.

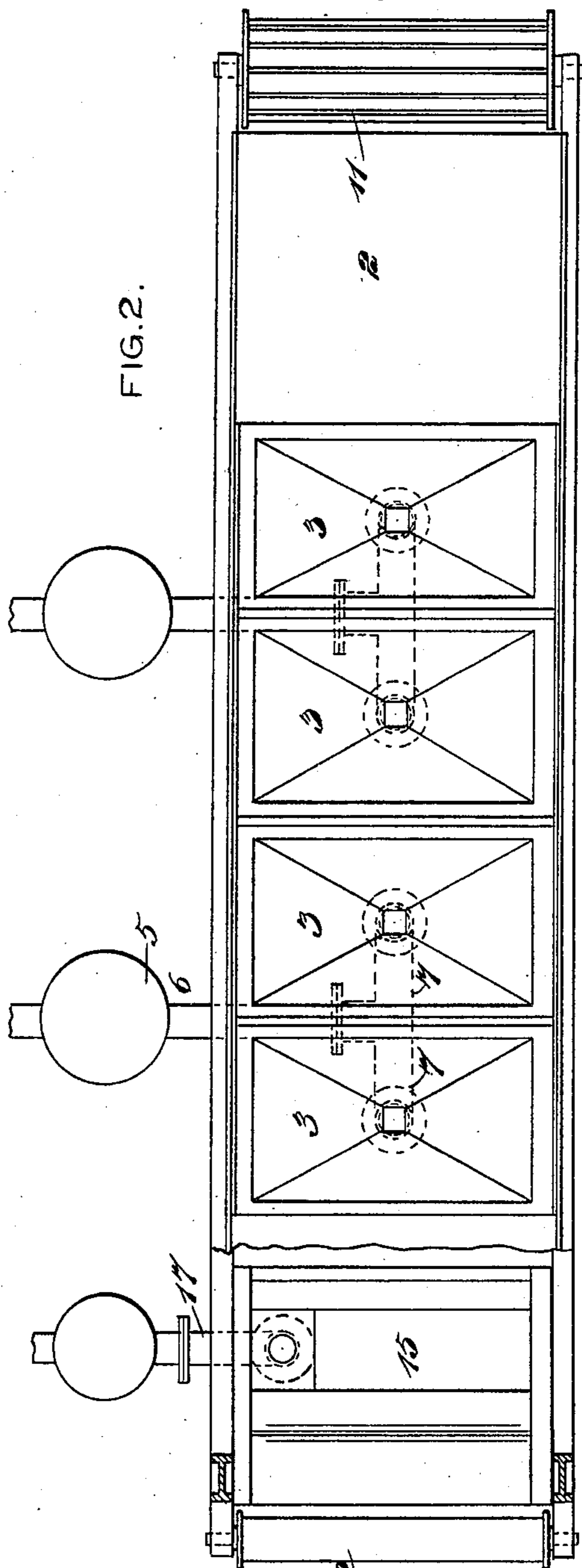


FIG. 2.

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P. Droeshout

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

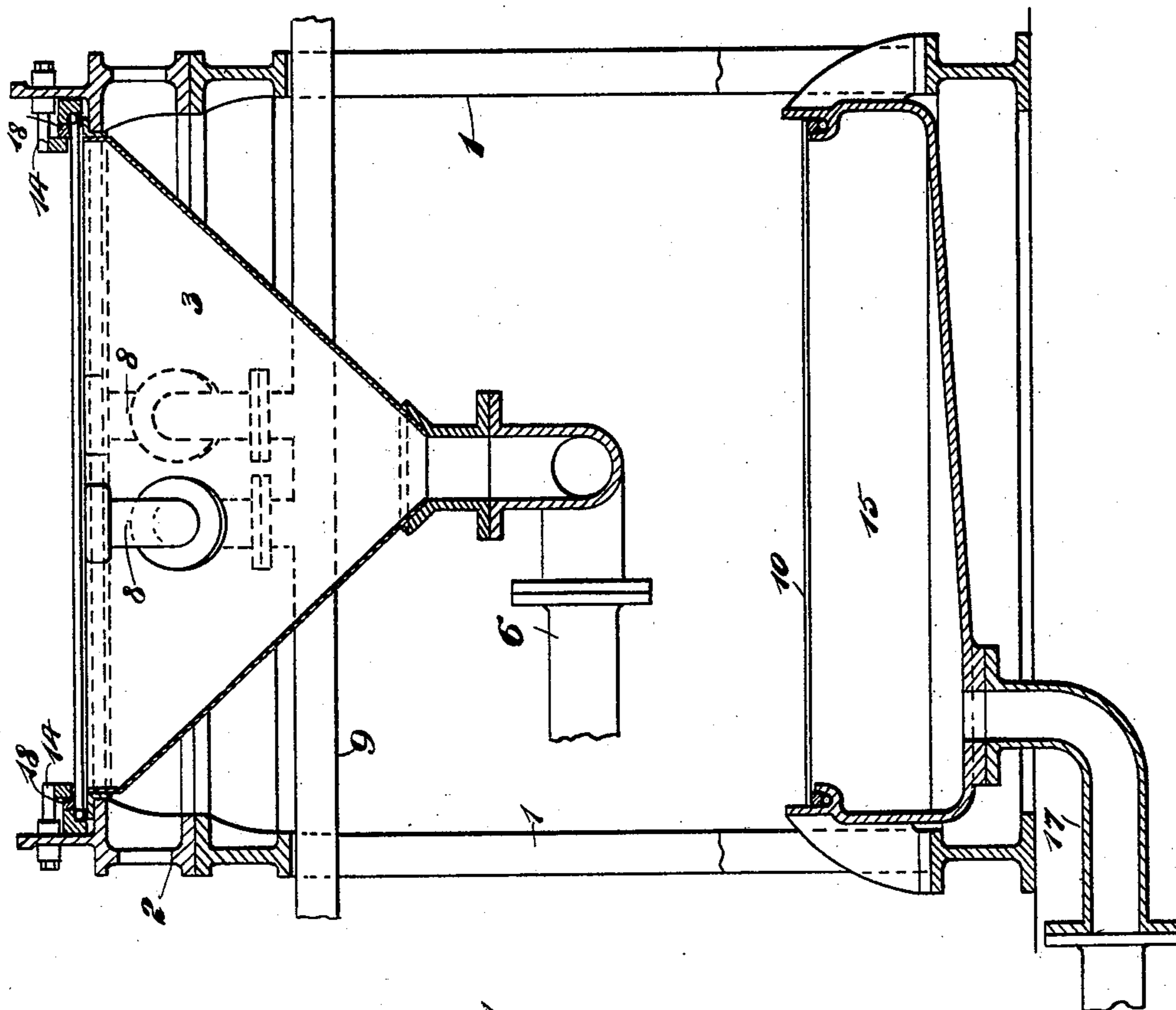
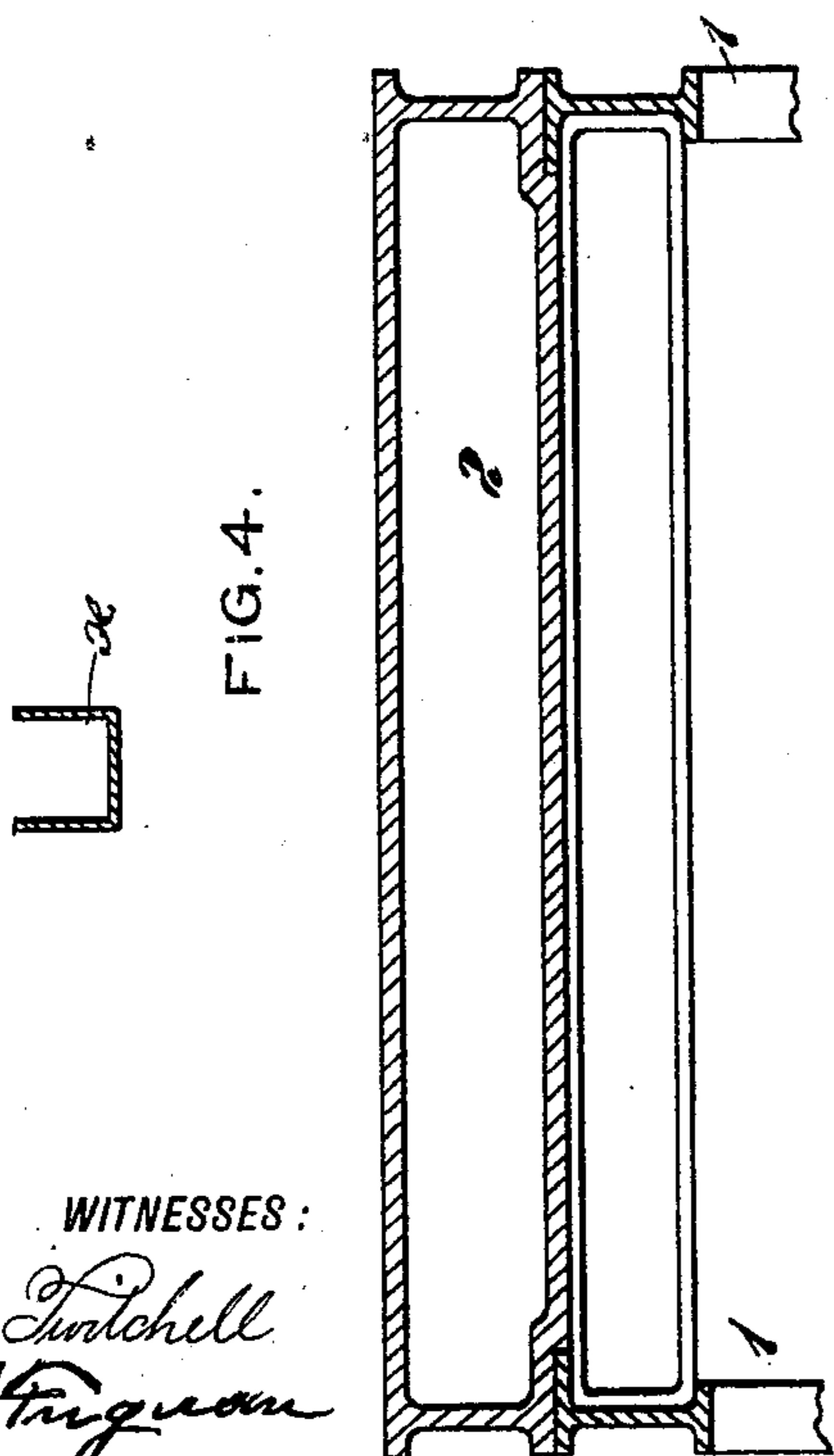


FIG. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

PIERRE DROESHOUT, OF PARIS, FRANCE.

FILTERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 583,361, dated May 25, 1897.

Application filed October 15, 1896. Serial No. 608,904. (No model.) Patented in France April 5, 1894, No. 237,550, and May 7, 1894, No. 228,203; in Belgium April 7, 1894, Nos. 109,357 and 109,358, and in Germany April 13, 1894, Nos. 78,709 and 78,757.

To all whom it may concern:

Be it known that I, PIERRE DROESHOUT, of Paris, France, at present residing at New York city, in the county and State of New York, have invented a new and Improved Filtering Apparatus, (for which I have obtained patents in Germany, Nos. 78,709 and 78,757, dated April 13, 1894; in France, No. 237,550, dated April 5, 1894, and No. 228,203, dated May 7, 1894, and in Belgium, Nos. 109,357 and 109,358, dated April 7, 1894,) of which the following is a full, clear, and exact description.

This invention relates to improvements in devices for filtering liquid materials—such, for instance, as cane-juice or similar material; and the object is to provide an apparatus by means of which the filtration may be rapidly carried on.

The invention comprises a longitudinally-movable filtering-bed, means for moving the same, and suction devices for drawing the liquid through the filtering-bed.

The invention further consists in the construction and novel arrangement of the various parts, as will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal vertical section of a filtering apparatus embodying my invention. Fig. 2 is a top plan view with certain parts removed to more clearly show other parts. Fig. 3 is a transverse vertical section on an enlarged scale, and Fig. 4 is a sectional detail showing the heating or drawing device.

The invention comprises a frame 1, of any suitable construction and of any desired length, controlled mainly by the nature of the material to be filtered. At each end of the frame 1 is provided a heating-box 2, which may be heated by steam or by any other desired means. Arranged between the heating-boxes 2 and having their upper ends on a horizontal plane with the upper side of said boxes is a series of receivers 3. There may be any desired number of these receivers 3, and each one is provided with a top or cover 4,

having a number of perforations. Each receiver 3 is connected with a suction-pump or similar device 5. As here shown, two receivers are connected to the pipe 6 of said suction-pump by means of branch pipes 7, with which the lower ends of the receivers communicate. I may provide auxiliary suction devices for the receivers, as indicated by the pipes 8, extended into the receivers and communicating with a pipe 9, leading to a suitable suction-pump. These auxiliary suction devices, however, need to be used only in cases where the liquid to be filtered is of such a nature that it cannot be readily drawn through the filtering-bed by the pumps 5.

Arranged to travel over the boxes 2 and over the perforated plates of the receivers 3 is a filtering-bed 10, consisting of any suitable fabric, such as wire or cloth, through which liquid may pass. This filtering-bed is here shown in the form of an endless band, and it extends over rollers 11, mounted at the ends of the frame 1, and around rollers 12, located at the ends of the frame at the lower portion thereof, and the filtering-bed also passes over tightening-rollers 13. Power may be applied to either one of the rollers for imparting motion to the filtering-bed. The rollers 11 are here shown as longitudinally fluted, the object of this construction being to impart a slight vibratory motion to the filtering-bed as it passes over a roller and thus detach the dirt or dross remaining upon the bed after filtering liquid through the same.

Arranged at suitable points above the filtering-bed is a series of tubes 14, through which steam or any desired liquid may be forced upon the surface of the filtering-bed for the purpose of diluting the liquid to be filtered and wash or drain the scums or residues of filtrations.

Arranged in the frame 1 at its lower part and near one end is a washing-tub 15, over which the filtering-bed 10 passes, and arranged over this washing-tub is a pipe 16, through which water may flow onto the filtering-bed. The water thus forced onto the filtering-bed is drawn through the same, so as to thoroughly clean the dirt and dross, by means of a suction-pump connected with a pipe 17, commu-

nicating with said washing-tub. Preferably the edges of the filtering-bed 10 will be provided with an upwardly-extended strip of flexible material 18—such, for instance, as
 5 rubber. These strips 18 will not only support the edges of the filtering material, but will also serve as flanges to retain the liquid thereon.

In operation the liquid to be filtered will be discharged through the duct α upon the filter-
 10 ing-bed above one of the boxes 2 and the box at this point will not be heated. Then as the filtering-bed moves along the suction-pumps will draw the liquid through the same into the receivers 3. The liquid not drawn through or
 15 into the first receivers may be drawn through by one or several succeeding suction-pumps. As the filtering-bed passes over the box 2, which is at what might be termed the “dis-
 20 charge” end, the heat in said box will dry the filtering-bed and consequently loosen the dirt and other material remaining on the same, and then as this filtering-bed passes over the
 25 fluted roller 11 a slight vibration will take place, which will cause the dirt to be thrown off of the filtering-bed. Such dirt as may adhere to the filtering-bed will be washed off the same by means of the water from the pipe 16, drawn into the tub 15.

As before stated, I have here shown the filter-
 30 ing-bed in the form of an endless band, which of course may be caused to travel in either direction as desired, but it is to be understood that I do not limit my invention to an endless filtering-bed, as it may be caused
 35 to move alternately in opposite directions—that is, it may have its ends connected to rollers similar to the rollers 13 and wound upon one roller and then upon the other.

Having thus described my invention, I
 40 claim as new and desire to secure by Letters Patent—

1. A filtering apparatus, comprising a frame, a heating-box arranged at one end thereof, a series of receivers supported in said frame, suction-pumps having connection with
 45 said receivers, auxiliary suction devices having connection with the receivers, a filtering-bed in the form of an endless band passing over said heating-box and over the receivers, a longitudinally-fluted roller over which said
 50 filtering-bed passes, and means for causing a longitudinal movement of said filtering-bed, substantially as specified.

2. A filtering apparatus, comprising a frame, heating-boxes supported at the ends
 55 thereof, receivers arranged between the heating-boxes, perforated covers or tops for said receivers, suction-pumps having pipe connections with the receivers, an auxiliary suction device having connection with the receivers,
 60 a filtering-bed movable over the heating-boxes and receivers, and means for imparting a longitudinal movement to said filtering-bed, substantially as specified.

3. A filtering apparatus, comprising a frame, heating-boxes supported at the ends
 65 thereof, pairs of receivers arranged between the heating-boxes, a suction device for communicating with each pair of receivers, liquid-discharging tubes for the receivers, a filter-
 70 ing-bed movable over the heating-boxes and receivers, a washing-tub arranged in the frame and over which the filtering-bed passes, a pipe above said tub for discharging washing liquid onto the filtering-bed, and a suction-pump
 75 having connection with said washing-tub, substantially as specified.

PIERRE DROESHOUT.

Witnesses:

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